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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/843,342	04/25/2001	Bruce L. Roberts	GA0211US	8525
24536	7590	03/24/2005	EXAMINER	
GENZYME CORPORATION LEGAL DEPARTMENT 15 PLEASANT ST CONNECTOR FRAMINGHAM, MA 01701-9322			VANDERVEGT, FRANCOIS P	
			ART UNIT	PAPER NUMBER
			1644	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p>09/843,342</p>	<p>Applicant(s)</p> <p>ROBERTS ET AL.</p>	
	<p>Examiner</p> <p>F. Pierre VanderVegt</p>	<p>Art Unit</p> <p>1644</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 12-21, 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-11 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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### **DETAILED ACTION**

This application claims the benefit of the filing date of provisional application 60/200,562.

Claim 22 has been canceled.

Claims 1-21 and 23-25 are currently pending.

#### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 21, 2004 has been entered.

#### ***Election/Restrictions***

1. Claims 1-6, 12-21 and 23-24 stand as withdrawn pursuant to the Restriction Requirement mailed July 1, 2002.

Claims 7-11 and 25 are the subject of examination in the present Office Action.

In view of Applicant's amendment filed December 21, 2004 no outstanding grounds of rejection are maintained.

The following represents a NEW ground of rejection.

2. Applicant's arguments with respect to claims 7-11 and 25 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "the leucine zipper domain" in part (i). There is insufficient antecedent basis for this limitation in the claim. It is suggested that the recitations regarding the leucine zipper in parts (i) and (ii) in the claim be reversed.

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Claim 11 is ambiguous and unclear in the recitation of a "recombinant system" in the preamble. There is insufficient nexus between elements (i) and (ii) of the claim to support the recitation as they also read upon separate components in a solution. Correction is required.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 7-11 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,309,645 to Rhode et al. (A on form PTO-892, newly cited) in view of U.S. Patent No. 5,932,448 to Tso et al. (B on form PTO-892; newly cited).

The '645 patent teaches a polynucleotide comprising a nucleic acid molecule that encodes a soluble single chain MHC class II molecule with a covalently attached presenting peptide and a gene delivery vehicle comprising same (see entire patent; Abstract, Figures 24-30 in particular)[claims 7-8]. The '645 patent teaches host cells comprising the polynucleotide and the expressed polypeptide (Example 18 for example) [claims 9-10]. While the lexicography used in the '645 patent is different than that used in the instant specification, one of ordinary skill in the art would recognize the single chain MHC class II molecules of the '645 patent as satisfying the metes and bounds of the "T cell antigen presenting domain of an MHC molecule" as recited in the instant claims. The '645 patent further teaches a recombinant system comprising a first polynucleotide comprising a nucleic acid encoding a T cell antigen presenting domain of an MHC molecule (soluble single chain MHC class II molecule) and a second polynucleotide comprising a nucleic acid encoding a T cell epitope which binds specifically to the antigen presenting domain (presenting peptide; column 16, line 63 through column 17, line 10 in particular) [claims 11, 25]. The '645 patent teaches that homologous multivalent MHC fusion complexes are desirable for a number

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of applications. The '645 patent teaches, for example, that some T cells can only be stimulated by multivalent MHC complexes. The '645 patent teaches that multivalent MHC molecules can be made by fusing the single chain MHC molecules to immunoglobulin chains or recombinantly adding a reactive side chain amino acid residue to the C terminus to conjugate the single chain MHC molecules to a dendrimer (column 15, line 63 through column 16, line 27 in particular).

The '645 patent does not teach the use of leucine zippers to make homodimers of T cell antigen presenting domains of MHC molecules.

The '488 patent teaches nucleic acid molecules encoding a heavy chain portion of an Fab' immunoglobulin fragment attached to a leucine zipper domain. The '448 patent teaches that two Fab' fragments covalently attached to leucine zippers can be combined so that the leucine zippers will homodimerize to generate bispecific antibody constructs (see entire patent). The '448 patent teaches that Jun leucine zippers will readily form stable homodimers in the absence of Fos leucine zippers (column 5, lines 14-27 and column 5, line 49 through column 6, line 15 in particular).

It would have been prima facie obvious to a person having ordinary skill in the art at the time the invention was made to genetically engineer the single chain T cell antigen presenting domain of an MHC molecule with or without a covalently attached presenting peptide as taught by the '645 patent as a fusion protein with the leucine zipper domain as taught by the '448 patent. One would have been motivated, with a reasonable expectation of success, to combine the teachings to make bivalent homodimers by the teaching of the '645 patent that multivalent molecules are desirable for stimulation of antigen-specific T cells and the teaching of the '448 patent that Jun leucine zippers will homodimerize in the absence of Fos leucine zippers and the dimers thus formed are efficient in forming dimers and are of high purity. One would be further motivated to use the leucine zippers as taught by the '448 patent because the small size of the leucine zipper versus an immunoglobulin Fc region will result in a smaller recombinant complex and leucine zippers do not bear the immunogenic determinants of a xenogeneic immunoglobulin.

### *Conclusion*


6. No claim is allowed.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to F. Pierre VanderVegt whose telephone number is (571) 272-0852. The examiner can normally be reached on M-Th 6:30-4:00; Alternate Fridays 6:30-3:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

F. Pierre VanderVegt, Ph.D.   
Patent Examiner  
March 14, 2005

  
DAVID SAUNDERS  
PRIMARY EXAMINER  
ART UNIT 182/644